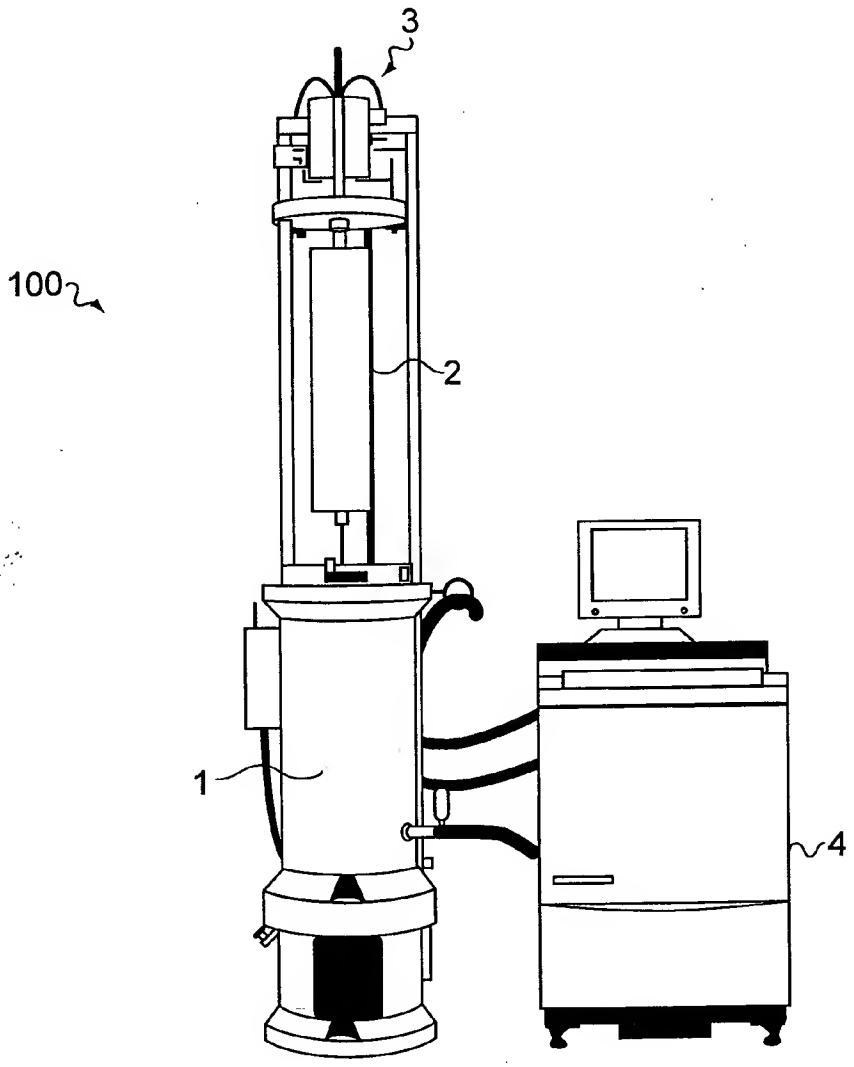


FIG. 1

EP 1 457 660 A1

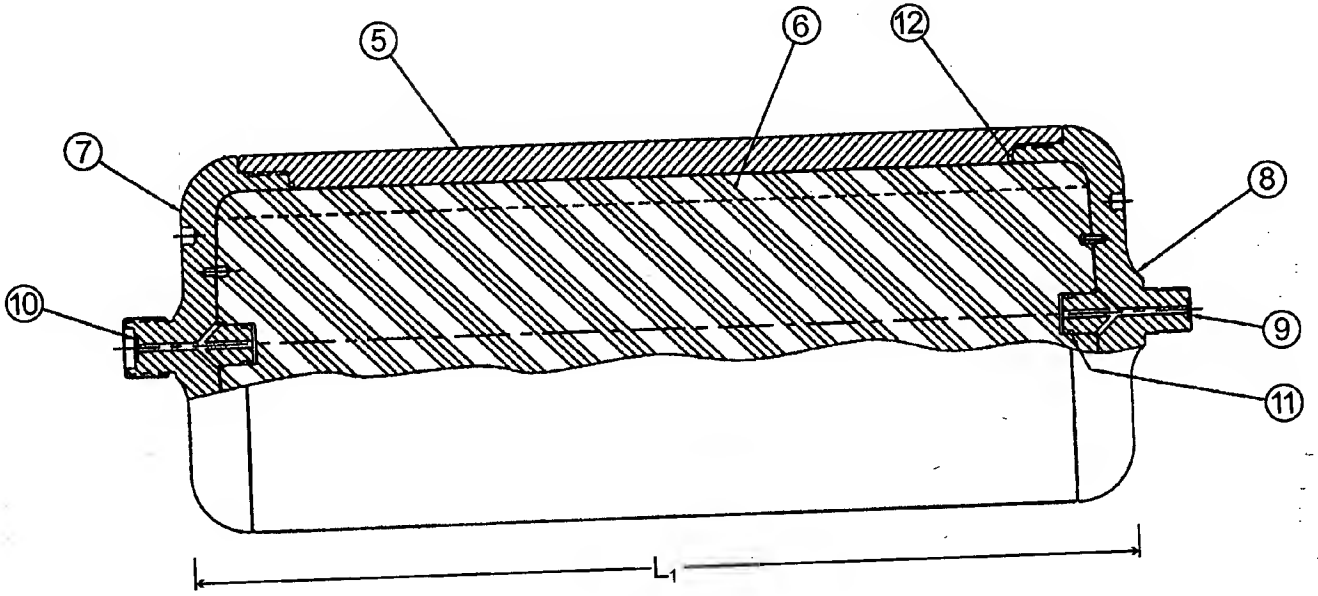


FIG. 2A

TOSHIBA 4505669

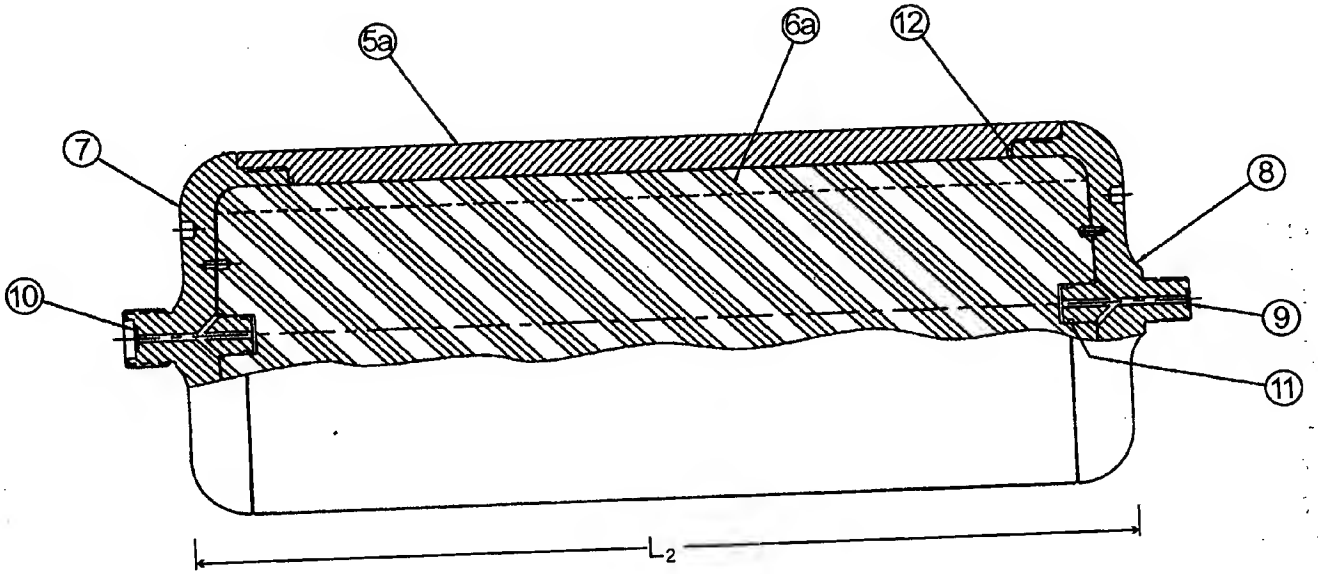


FIG. 2B

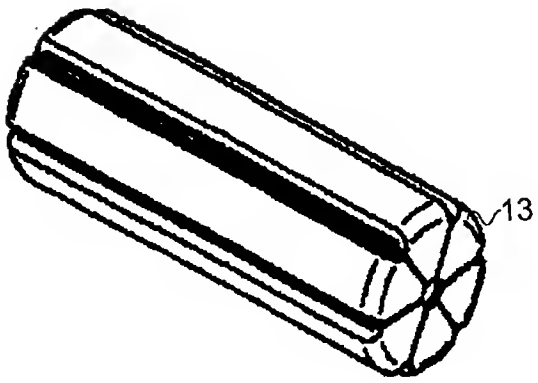


FIG. 3A

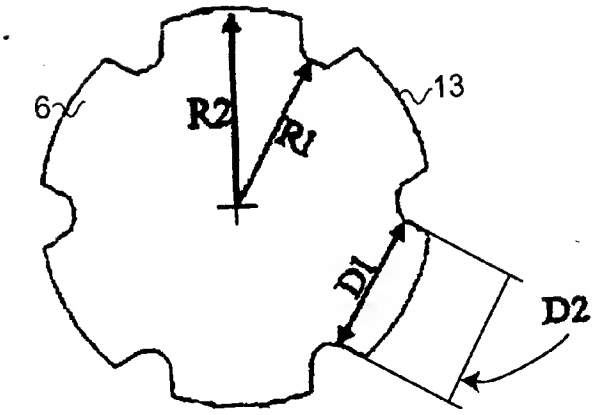


FIG. 3B

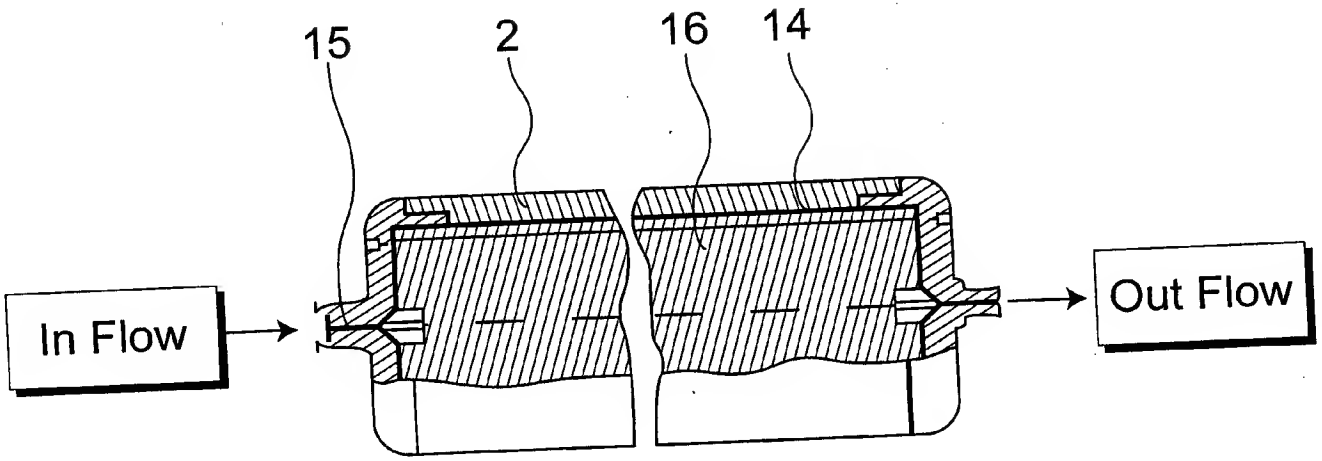


FIG. 4

TOSHIBA-0056660

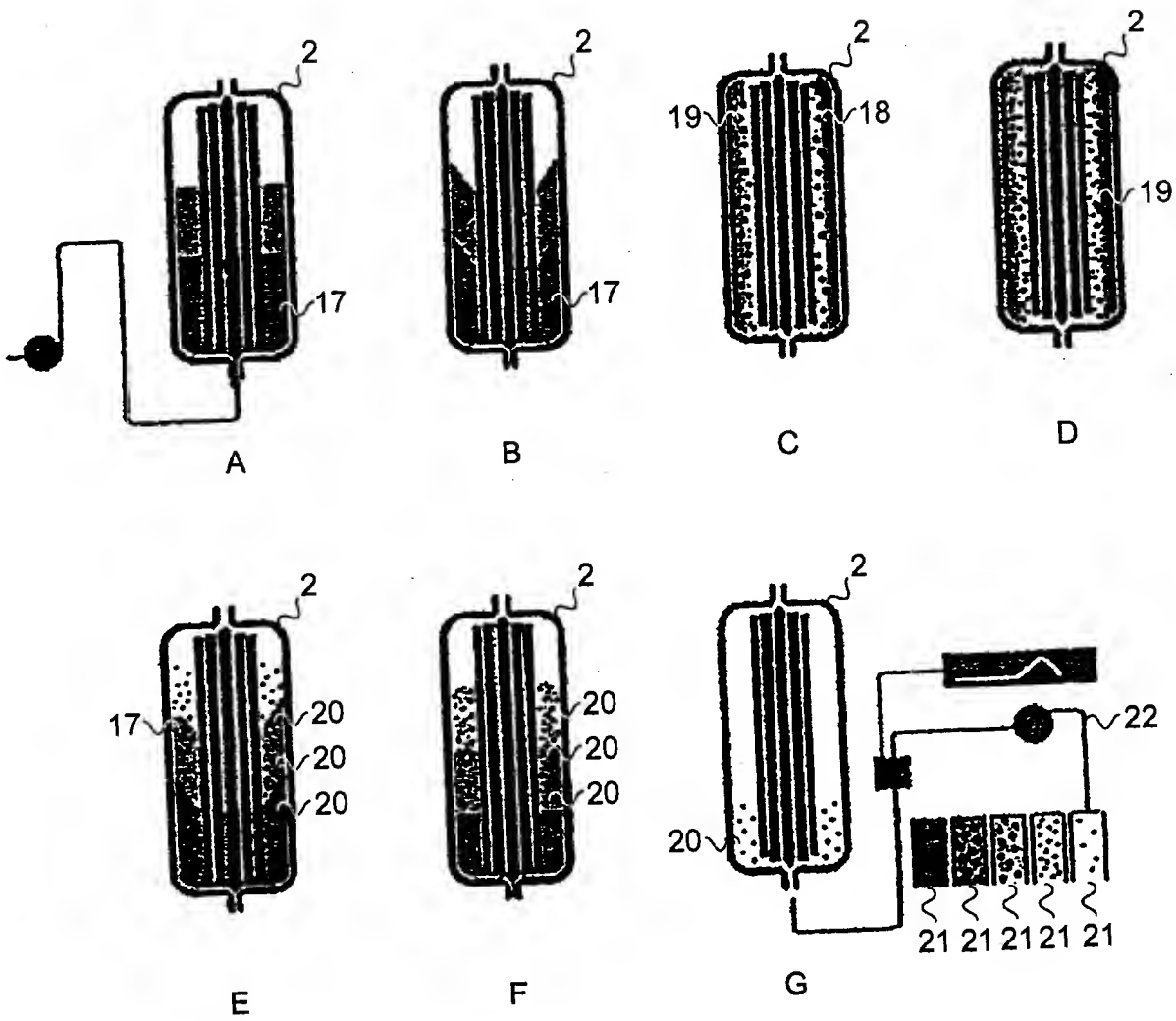


FIG. 5

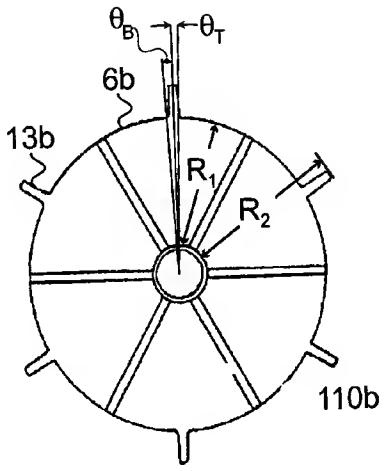


FIG. 6

66.0	R2	Outer Radius of the Core in mm	2.598	inches		
54.5	R1	Inner Radius in mm	2.145	inches		
	Theta-T	Angle formed by one-half the top fin surface in radians	0.0160	0.91527174	degrees	
	Theta-B	Angle formed by one-half the bottom fin surface in radians	0.0106	0.60780781	degrees	
764.3	L	Length of the Core in mm				
30.090						
V2	Total volume of the Cylinder:		10455661.2 mm^3	10456 mL		
V1	Total volume of the Core trunk:		7124023.0 mm^3	7124 mL	Outer	Inner
W1	Fin Volume Component 1:		8470.4 mm^3	102 mL	26582.7	18112.27
C1	Length of the Chord formed for W2:		0.6 mm	0.023 inch		
W2	Fin Volume Component 2:		2543.2 mm^3	31 mL	3.327887	0.000295
	Available Volume:		3199.47 mm^3			
	D1	Lateral distance across fin bottom in mm		0.114 inches	(D2+0.031")	2.8956
2.1	D2	Lateral distance across fin top in mm		0.083 inches		
0.083						
					Intermediate Terms	
	Calculated Theta-T in radians		0.0160	0.915272 degrees	0.999	
	Calculated (Theta-T+Theta-B) in radians		0.0266	1.52308 degrees	0.999	
	Calculated Theta-B in radians		0.0106	0.607808 degrees		
	Calculated fin Wall Angle in radians		-1.5366	-88.04247 degrees	11.5189	-0.3937

FIG. 7

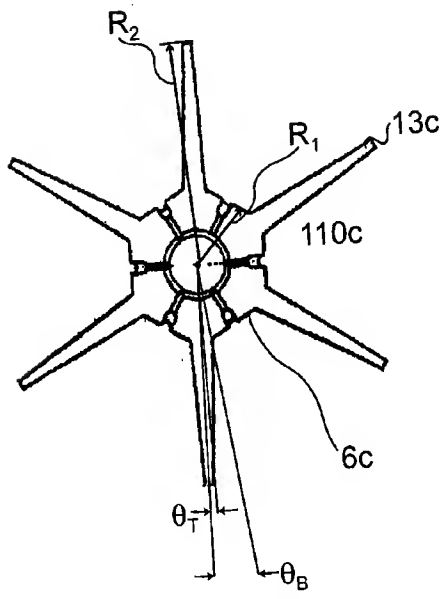


FIG. 8

66.0	R2	Outer Radius of the Core in mm	2.598	inches	
21.0	R1	Inner Radius in mm	0.825	inches	
	Theta-T	Angle formed by one-half the top fin surface in radians	0.0192	1.10275822	degrees
	Theta-B	Angle formed by one-half the bottom fin surface in radians	-0.1329	7.6119838	degrees
754.1	L	Length of the Core in mm			
29.690					

V2	Total volume of the Cylinder:	10316669.4	mm^3	10317	mL	
V1	Total volume of the Core trunk:	1040325.2	mm^3	1040	mL	
W1	Fin Volume Component 1:	28415.5	mm^3	341	mL	
C1	Length of the Chord formed for W2:	2.8	mm	0.110	inch	
W2	Fin Volume Component 2:	47172.1	mm^3	566	mL	

						Outer	Inner
	Available Volume =	[illegible]		8.4	L	31602.2	3186.742
						62.6377	0.085731
	D1	Lateral distance across fin bottom in mm		0.250	inches	(D2+0.031")	
2.5	D2	Lateral distance across fin top in mm		0.100	inches		
0.100							

				Intermediate Terms	
Calculated Theta-T in radians	0.0192	1.102758	degrees	0.999	
Calculated (Theta-T+Theta-B) in radians	0.1521	8.714742	degrees	0.954	
Calculated Theta-B in radians	0.1329	7.611984	degrees		
Calculated fin Wall Angle in radians	-1.5285	-87.57776	degrees	45.0342	-1.905

FIG. 9

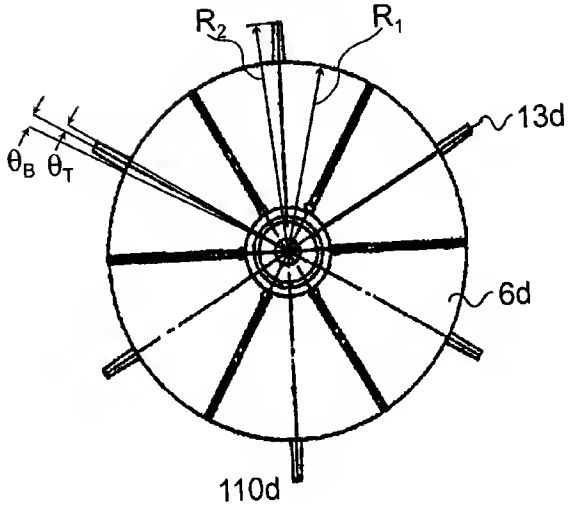


FIG. 10

66.0	R2	Outer Radius of the Core in mm	2.598	inches	
54.5	R1	Inner Radius in mm	2.145	inches	
	Theta-T	Angle formed by one-half the top fin surface in radians			0.91527174 degrees
	Theta-B	Angle formed by one-half the bottom fin surface in radians			0.60780781 degrees
762.7	L	Length of the Core in mm			
30.027					

V2	Total volume of the Cylinder:	10433770.0 mm^3	10434 mL	Outer	Inner
V1	Total volume of the Core trunk:	7109107.3 mm^3	7109 mL	26527.04	18074.35
W1	Fin Volume Component 1:	8452.7 mm^3	101 mL		
C1	Length of the Chord formed for W2:	0.6 mm	0.023 inch		
W2	Fin Volume Component 2:	2537.9 mm^3	30 mL	3.327887	0.000295

Available Values

	D1	Lateral distance across fin bottom in mm	0.114 inches	(D2+0.031")	
2.1	D2	Lateral distance across fin top in mm	0.083 inches		
1.088					

			Intermediate Terms
Calculated Theta-T in radians	0.0160	0.915272 degrees	0.999
Calculated (Theta-T+Theta-B) in radians	0.0266	1.52308 degrees	0.999
Calculated Theta-B in radians	0.0106	0.607808 degrees	
Calculated fin Wall Angle in radians	-1.5366	-88.04247 degrees	11.5189 -0.3937

FIG. 11

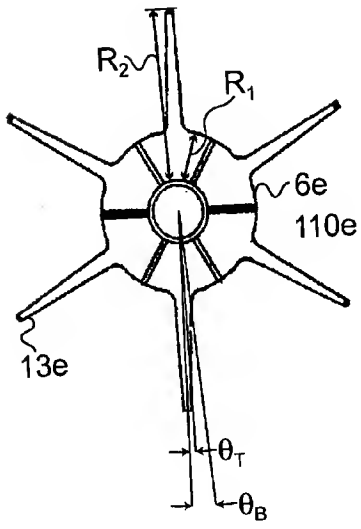


FIG. 12

66.0	R2	Outer Radius of the Core in mm	2.598	inches		
26.7	R1	Inner Radius in mm	1.052	Inches		
	Theta-T	Angle formed by one-half the top fin surface in radians	0.0217	1.2461381	degrees	
	Theta-B	Angle formed by one-half the bottom fin surface in radians	0.0844	4.83798852	degrees	
764.3	L	Length of the Core in mm				
60.090						
V2	Total volume of the Cylinder:		10455661.2	mm^3	10456	mL
V1	Total volume of the Core trunk:		1714370.5	mm^3	1714	mL
W1	Fin Volume Component 1:		30257.9	mm^3	363	mL
C1	Length of the Chord formed for W2:		2.3	mm	0.089	inch
W2	Fin Volume Component 2:		33818.5	mm^3	406	mL
	Available Volume:		[illegible]	mm^3	8.0	L
	D1	Lateral distance across fin bottom in mm		0.223	inches	(D2+0.031")
2.9	D2	Lateral distance across fin top in mm		0.113	inches	
0.113						

	Outer	Inner		
	36192.22	5934.284		
	44.28434	0.035809		
	5.6642			

Intermediate Terms

Calculated Theta-T in radians	0.0217	1.246138	degrees	0.999
Calculated (Theta-T+Theta-B) in radians	0.1062	6.084127	degrees	0.978
Calculated Theta-B in radians	0.0844	4.837989	degrees	
Calculated fin Wall Angle in radians	-1.5352	-87.96252	degrees	39.2684 -1.397

FIG. 13

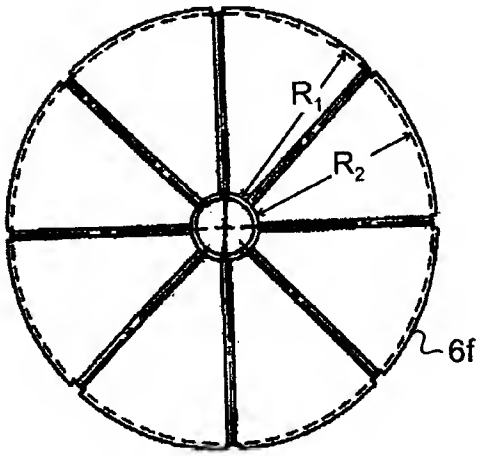


FIG. 14

66.0	R2	Outer Radius of the Core in mm	2.598	Inches		
65.0	R1	Inner Radius in mm	2.561	inches		
	Theta-T	Angle formed by one-half the top fin surface in radians			0	degrees
	Theta-B	Angle formed by one-half the bottom fin surface in radians			0	degrees
764.3	L	Length of the Core in mm				
30.090						
V2	Total volume of the Cylinder:		10455661.2	mm^3	10456	mL
V1	Total volume of the Core trunk:		10159968.6	mm^3	10160	mL
W1	Fin Volume Component 1:		0.0	mm^3	0	mL
C1	Length of the Chord formed for W2:		0.0	mm	0.000	inch
W2	Fin Volume Component 2:		0.0	mm^3	0	mL
	Available Volume:		295169	mm^3	= 0.3	L
	D1	Lateral distance across fin bottom in mm	0.000	Inches	(D2+0.031")	
0.0	D2	Lateral distance across fin top in mm	0.000	Inches		
0.000						

				Intermediate Terms
Calculated Theta-T in radians	0.0000	0	degrees	1.000
Calculated (Theta-T+Theta-B) in radians	0.0000	0	degrees	1.000
Calculated Theta-B in radians	0.0000	0	degrees	
Calculated fin Wall Angle in radians	#DIV/0!	#DIV/0!	degrees	0.9398

Outer	Inner
0	0
0	0

FIG. 15

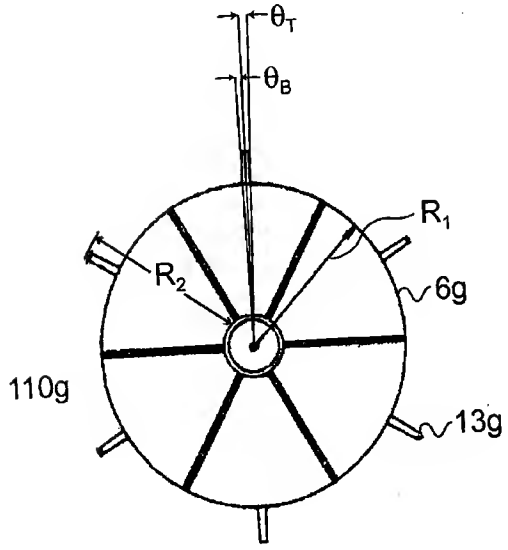


FIG. 16

66.0	R2	Outer Radius of the Core in mm	2.598	inches	5.196	
54.5	R1	Inner Radius in mm	2.145	inches	4.29	
	Theta-T	Angle formed by one-half the top fin surface in radians	0.0160	0.91527174	degrees	
	Theta-B	Angle formed by one-half the bottom fin surface in radians	0.0106	0.6074527	degrees	
382.1	L	Length of the Core in mm				

V2	Total volume of the Cylinder:	5227135.7 mm^3	5227 mL	Outer	Inner
V1	Total volume of the Core trunk:	3563198.9 mm^3	3563 mL	13289.58	9059.154
W1	Fin Volume Component 1:	4230.4 mm^3	51 mL		
C1	Length of the Chord formed for W2:	0.6 mm	0.023 inch		
W2	Fin Volume Component 2:	1269.6 mm^3	15 mL	3.32305	0.000295
	Available volume:	[illegible]	[illegible]		

	D1	Lateral distance across fin bottom in mm	0.114	inches	(D2+0.031")
2.1	D2	Lateral distance across fin top in mm	0.083	inches	
0.083					

			Intermediate Terms	
Calculated Theta-T in radians	0.0160	0.915272 degrees	0.999	
Calculated (Theta-T+Theta-B) in radians	0.0266	1.522724 degrees	0.999	
Calculated Theta-B in radians	0.0106	0.607453 degrees		
Calculated fin Wall Angle in radians	-1.5366	-88.04031 degrees	11.5062	-0.3937

FIG. 17

66.0	R2	Outer Radius of the Core in mm	2.598	inches	
54.5	R1	Inner Radius in mm	2.145	inches	
	Theta-T	Angle formed by one-half the top fin surface in radians	0.2521	14.4433492	degrees
	Theta-B	Angle formed by one-half the bottom fin surface in radians	0.0625	3.57949303	degrees
382.1	L	Length of the Core in mm			

V2	Total volume of the Cylinder:	5227135.7	mm^3	5227	mL	
V1	Total volume of the Core trunk:	3561538.0	mm^3	3562	mL	Outer 209714.8 Inner 142890.4
W1	Fin Volume Component 1:	66824.5	mm^3	802	mL	
C1	Length of the Chord formed for W2:	3.4	mm	0.134	inch	
W2	Fin Volume Component 2:	7405.1	mm^3	89	mL	19.44062 0.060277
	Available Volume			= 0.8	L	

	D1	Lateral distance across fin bottom in mm	1.327	inches	(D2+0.031") 33.7058
32.9	D2	Lateral distance across fin top in mm	1.296	inches	
1.296					Intermediate Terms
		Calculated Theta-T in radians	0.2521	14.44335 degrees	0.876
		Calculated (Theta-T+Theta-B) in radians	0.3146	18.02284 degrees	0.809
		Calculated Theta-B in radians	0.0625	3.579493 degrees	
		Calculated fin Wall Angle in radians	-1.5366	-88.04247 degrees	11.5189 -0.3937

FIG. 18

66.0	R2	Outer Radius of the Core in mm	2.598 inches	5.196	
54.5	R1	Inner Radius in mm	2.145 inches	4.29	
	Theta-T	Angle formed by one-half the top fin surface in radians	0.3640	20.8573877	degrees
	Theta-B	Angle formed by one-half the bottom fin surface in radians	0.0899	5.14837464	degrees
382.1	L	Length of the Core in mm			

V2	Total volume of the Cylinder:	5227135.7	mm^3	5227	mL
V1	Total volume of the Core trunk:	3563198.9	mm^3	3563	mL
W1	Fin Volume Component 1:	96403.8	mm^3	1157	mL
C1	Length of the Chord formed for W2:	4.9	mm	0.193	Inch
W2	Fin Volume Component 2:	10511.8	mm^3	126	mL

	Outer	Inner
	302845.5	206441.7
	27.69047	0.179394

Available Volume [redacted] 0.74 L

D1	Lateral distance across fin bottom in mm	1.881 inches	(D2+0.031")	
47.0 D2	Lateral distance across fin top in mm	1.850 inches		
1.850				Intermediate Terms
	Calculated Theta-T in radians	0.3640	20.85739 degrees	0.746
	Calculated (Theta-T+Theta-B) in radians	0.4539	26.00576 degrees	0.616
	Calculated Theta-B in radians	0.0899	5.148375 degrees	
	Calculated fin Wall Angle in radians	-1.5366	-88.04031 degrees	11.5062 -0.3937

FIG. 19

EP 3 744 459 A1

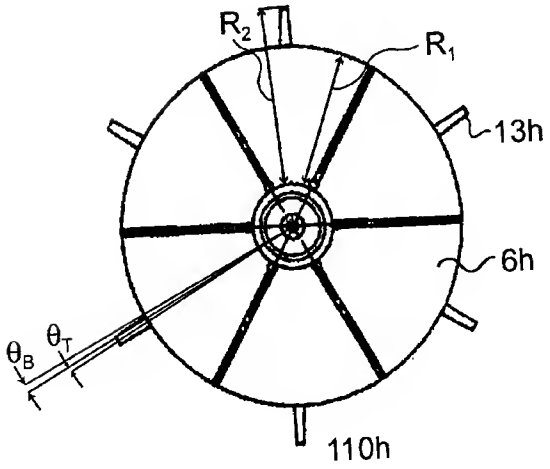


FIG. 20

66.0	R2	Outer Radius of the Core in mm	2.598	inches	
54.5	R1	Inner Radius in mm	2.145	inches	
	Theta-T	Angle formed by one-half the top fin surface in radians	0.0219	1.25716763	degrees
	Theta-B	Angle formed by one-half the bottom fin surface in radians	0.0119	0.6802237	degrees
380.5	L	Length of the Core in mm			

V2	Total volume of the Cylinder:	5205244.4	mm^3	5205	mL
V1	Total volume of the Core trunk:	3546622.3	mm^3	3547	mL
W1	Fin Volume Component 1:	5792.1	mm^3	70	mL
C1	Length of the Chord formed for W2:	0.6	mm	0.025	inch
W2	Fin Volume Component 2:	1416.9	mm^3	17	mL

	Outer	Inner
	18177.4	12385.27
	3.724271	0.000414

[redacted] Available Volume [redacted] 186 [redacted]

	D1	Lateral distance across fin bottom in mm	0.145 inches	(D2+0.031") [redacted]
2.9	D2	Lateral distance across fin top in mm	0.114 inches	
0.114				

			Intermediate Terms
Calculated Theta-T in radians	0.0219	1.257168 degrees	0.999
Calculated (Theta-T+Theta-B) in radians	0.0338	1.937391 degrees	0.998
Calculated Theta-B in radians	0.0119	0.680224 degrees	
Calculated fin Wall Angle in radians	-1.5366	-88.04247 degrees	11.5189 -0.3937

FIG. 21

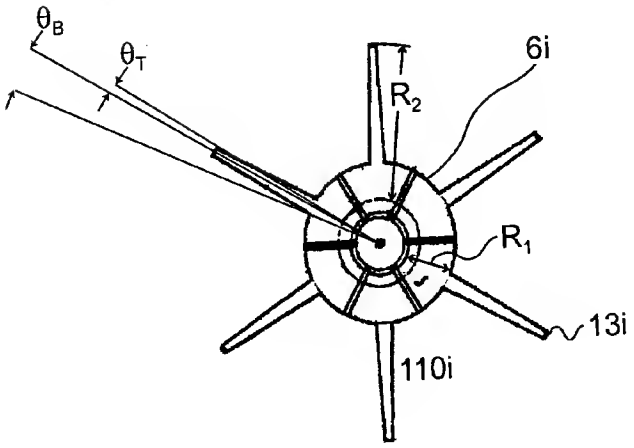


FIG. 22

66.0	R2	Outer Radius of the Core in mm	2.598	inches	
26.7	R1	Inner Radius in mm	1.052	inches	
	Theta-T	Angle formed by one-half the top fin surface in radians	0.0217	1.2461381	degrees
	Theta-B	Angle formed by one-half the bottom fin surface in radians	0.127	7.30918223	degrees
382.1	L	Length of the Core in mm			
15.043					

V2	Total volume of the Cylinder:	5227135.7	mm^3	5227	mL	
V1	Total volume of the Core trunk:	857071.3	mm^3	857	mL	Outer 18093.7 Inner 2966.748
W1	Fin Volume Component 1:	15127.0	mm^3	182	mL	
C1	Length of the Chord formed for W2:	3.4	mm	0.134	inch	
W2	Fin Volume Component 2:	25506.7	mm^3	306	mL	66.87882 0.123425
	Available Volume:	4369743.9	mm^3	4.3	L	

	D1	Lateral distance across fin bottom in mm	0.313	inches	(D2+0.031") 7.9502
2.9	D2	Lateral distance across fin top in mm	0.113	inches	
0.113					

				Intermediate Terms
Calculated Theta-T in radians	0.0217	1.246138	degrees	0.999
Calculated (Theta-T+Theta-B) in radians	0.1493	8.55532	degrees	0.956
Calculated Theta-B in radians	0.1276	7.309182	degrees	
Calculated fin Wall Angle in radians	-1.5062	-86.29909	degrees	39.2684 -2.54

FIG. 23

FOR PATENT APPLICATION

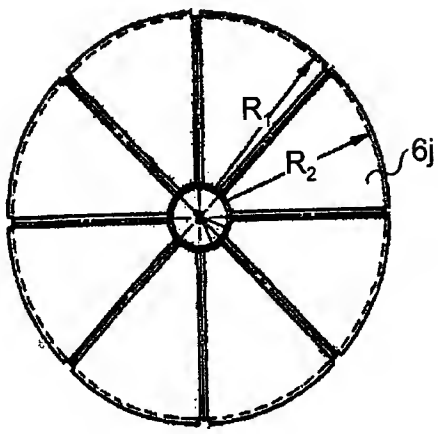


FIG. 24

66.0	R2	Outer Radius of the Core in mm	2.598	inches		
65.0	R1	Inner Radius in mm	2.561	inches		
	Theta-T	Angle formed by one-half the top fin surface in radians	0.0000		0	degrees
	Theta-B	Angle formed by one-half the bottom fin surface in radians	0.0000		0	degrees
382.1	L	Length of the Core in mm				
15.043						

V2	Total volume of the Cylinder:	5227135.7	mm^3	5227	mL
V1	Total volume of the Core trunk:	5079309.0	mm^3	5079	mL
W1	Fin Volume Component 1:	0.0	mm^3	0	mL
C1	Length of the Chord formed for W2:	0.0	mm	0.000	inch
W2	Fin Volume Component 2:	0.0	mm^3	0	mL

					Outer	Inner	
					0		0
					0		0

Available Volume = 0.1 L

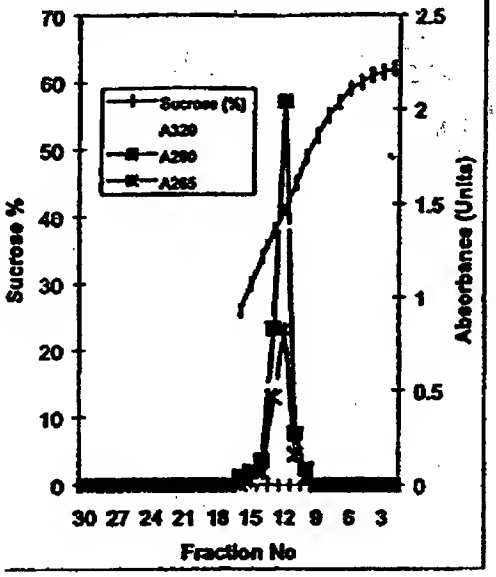
	D1	Lateral distance across fin bottom in mm	0.000	inches	(D2+0.031") 0.0000
0.0	D2	Lateral distance across fin top in mm	0.000	inches	
0.0000					

				Intermediate Terms	
Calculated Theta-T in radians	0.0000	0	degrees	1.000	
Calculated (Theta-T+Theta-B) in radians	0.0000	0	degrees	1.000	
Calculated Theta-B in radians	0.0000	0	degrees		
Calculated fin Wall Angle in radians	#DIV/0!	#DIV/0!	degrees	0.9398	0

FIG. 25

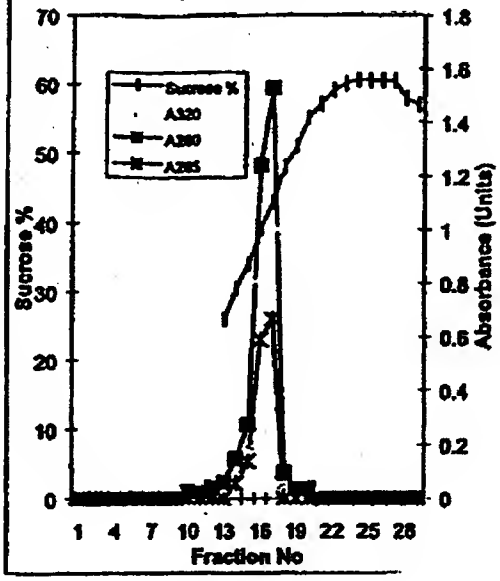
a

CORE OF FIGURE 6



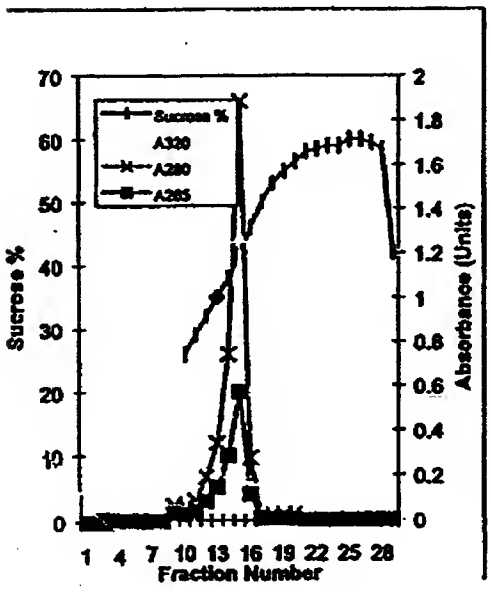
b

CORE OF FIGURE 17
AT 1600ml



c

CORE OF FIGURE 8
AT 800ml



d

CORE OF FIGURE 9
AT 400ml

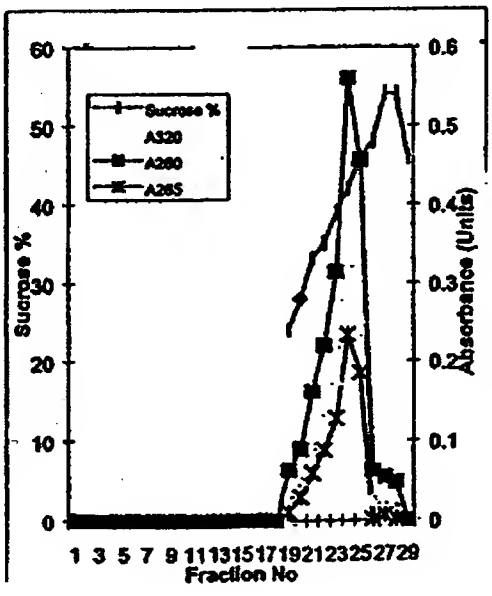


FIG. 26